

### Remarks

Claims 36 - 41 and 68 – 76 are pending in the application. Claims 1 – 35 have been cancelled by previous amendment. Claims 42-67 are cancelled in this Amendment because they were previously withdrawn from consideration pursuant to a Restriction Requirement. In the Advisory Action mailed October 20, 2003, the Examiner indicated that the previous amendment to the claims filed August 26, 2003 was entered.

The current amendments and new claims are fully supported in the specification and drawings. For example, the specification explains that at least a part of the binding space is identical to at least a part of the amplification space on page 17 and Figs. 2 -7 depicting a capillary reaction vessel for binding and amplifying nucleic acids. New claim 69 is supported in the specification, for example, on page 23, first full paragraph, and the drawings. New claims 70 - 76 are supported throughout the specification including the aforementioned sections. No new matter has been added.

In the Advisory Action, the Examiner argues that “Furcht et al teach that amplification space comprises a round or slit like space for nucleic acid sample which indicates at least part of amplification space comprises nucleic acid binding space.” While applicants respectfully disagree with the Examiner on this point, Applicants have amended claim 36 to recite that “at least part of the amplification space is identical to the binding space.” With the amendment, the claim is clearly distinguishable over Furcht, *et al.* because the binding space in Furcht, *et al.* is the FTA matrix collection device (Fig. 1, No. 11) and the amplification space is the round or slit like space. Thus, no portion of the binding space in Furcht, *et al.* is not identical to the amplification space.

Moreover, the Examiner does not address Applicants previous argument that Furcht *et al.* does not teach the separation of impurities as in claim 1. Instead, Furcht *et al.* teach that “processing of the specimen involves an external reagent washing of the FTA treated sample collection pad ... to remove[] all PCR-inhibitory compounds ... .” (col. 9, lines 24-32) (emphasis added). This is another example that Furcht *et al.* does not teach the presently claimed invention.

Accordingly, Furcht *et al.* does not teach each and every element of the device of independent claim 36 – 41 and claims 69 - 76. Accordingly, Applicants respectfully request that the rejection pursuant to 35 U.S.C. § 102 be withdrawn.

With regard to claim 68, the Advisory Action states that “Furcht *et al.* clearly teaches that the amplification chamber is constructed from heater chips, fabricated using integrated circuit technology wherein deposition of conductive metal is created in a coil filament which indicates that the metal heater surrounds the amplification chamber (see column 5, lines 1 – 20).” In this analysis, the Examiner ignores the clear teaching of Furcht, *et al.* of two opposed, spaced-apart microchip heater chips that are fabricated as a component of the top and bottom face wafers of the genetic test card (*see* col. 5, lns. 1 – 4 and col. 9, lns. 45- 57).

While Applicants disagree with the Examiner’s conclusion that the heating chips taught in Furcht *et al.* are equivalent to the limitation of claim 68 that the “capillary reaction vessel [is] surrounded by heatable metal layer wherein the layer is coated on the capillary reaction vessel,” Applicants have amended claim 68 to provide for a “single” heatable metal layer.

In addition, the Examiner appears to have cavalierly dismissed Applicants’ argument that “surround,” in its ordinary sense, means “1. To extend on all side of simultaneously; encircle; 2. To enclose or confine an all sides.” American Heritage Dictionary, 3<sup>rd</sup> Ed., Dell Publishing, New York, NY (1994). Examiner has not at all explained how the limitation “surround” is met by the two opposed spaced-apart microchip heaters taught in Furcht, *et al.* In the Advisory Action, the Examiner asserts that Furcht *et al.* teach that the metal heater surrounds the amplification chamber. This description of Furcht *et al.* is inaccurate, as shown in column 9, lines 45 – 57.

Furthermore, Furcht *et al.* does not disclose a heatable metal layer where the layer is coated on the capillary reaction vessel. In previous Office Action, the Examiner has relied upon column 10, lines 28-33 of Furcht *et al.* as teaching a “epoxy-like material” that is deposited on a silicon wafer to form the reservoirs and interconnecting capillary of the device. However, this disclosure does not teach the heatable metal layer surrounding

a capillary reaction vessel present claim 68 since the material in Furcht *et al.* is an epoxy material, not metal as recited in claim 68. While metal may be used in creating the heating coil that is present in the microchip heaters, nothing in Furcht *et al.* teaches that a metal layer is coated on the vessel. Moreover, the vessel in Furcht *et al.* is the GeneStrip (FTA collection matrix) that is inserted into the genetic test card (col. 8, line 51 – col. 9, ln. 10). The microchip heaters are top and bottom face wafers of the test card. (col. 9, lns. 55 – 57). Nothing in this disclosure teaches a capillary reaction vessel.

Accordingly, Furcht *et al.* fails to teach each and every element of claim 68 because Furcht *et al.* does not teach a single metal layer that is coated on and surrounds a capillary reaction vessel as recited in claim 68. Therefore, Applicants respectfully request that the rejection of claim 68 over Furcht, *et al.* be withdrawn.

Turning now Burns *et al.*, the Advisory Action fails to accurately address Applicants previous argument that, with regard to claim 36, Burns *et al.* does not teach a binding space for purifying nucleic acids by immobilizing the nucleic acids and separating impurities. According to the Examiner, Burns *et al.* “teach interconnected channel to a reaction chamber which indicates that a part of the transport channel is in the reaction chamber (amplification space)... .” However, this disclosure has nothing to do with the purification of nucleic acids. In fact, Burns *et al.* is completely silent with regard to nucleic acid purification.

If Examiner maintains the rejection of Burns *et al.* Applicants respectfully and specifically request that Examiner to point out where Burns *et al.* teaches a binding space for “immobilizing nucleic acids and removing impurities” as recited in claim 36. Without this teaching, Burns *et al.* cannot anticipate claim 36. Accordingly, Applicants respectfully request that the rejection pursuant to 35 U.S.C. § 102(e) over Burns *et al.* be withdrawn.

Turning now to claim 68, the Advisory Action states that “Burns et al teach heatable metal resistors in the proximity of the reaction chamber which indicates that the reaction chamber is surrounded by the heatable element.” However, as previous pointed out to the Examiner, Burns *et al.* simply describes that resistors are in contact with or in

proximity of the reaction chamber (column 6, lines 8-9). This does not teach a heatable metal layer that is coated on the reaction vessel. Similarly, Burns *et al.* teaches that a series of heating elements maybe arrayed along one or more microdroplet transport channels. Such resistive heaters may be located slightly beneath the channels (column 6, lines 49-52). This disclosure does not teach that the heating element surrounds the reaction chamber as presently claimed in claim 68.

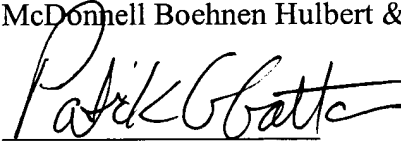
If Examiner is inclined to maintain the rejection of claim 68 over Burns *et al.*, Applicants respectfully and specifically request that Examiner point out where in Burns *et al.* is described a heatable layer that is both (1) metal, and (2) “surrounds” (as defined above) the reaction vessel as in claim 69. Otherwise, Applicants respectfully request that the rejection of claim 68 pursuant to 35 U.S.C. § 102 over Burns *et al.* be withdrawn.

### CONCLUSION

With the above amendments and remarks, Applicants respectfully submit that the application is in condition for allowance. If Examiner is of the opinion that a telephone conference would expedite prosecution of the application, Examiner is encouraged to contact Applicants’ undersigned representative.

Respectfully submitted,

McDonnell Boehnen Hulbert & Berghoff



Patrick G. Gattari

Reg. No. 39,682

McDonnell Boehnen Hulbert & Berghoff  
300 S. Wacker Drive  
Chicago, IL 60606  
(312) 913 0001